



Complete Summary

TITLE

Intensive care: percentage of adult patients having had an intensive care unit (ICU) stay whose hospital outcome is death.

SOURCE(S)

Specifications manual for national hospital quality measures - ICU. Oakbrook Terrace (IL): Joint Commission on Accreditation of Healthcare Organizations (JCAHO); 2005. various p.

Measure Domain

PRIMARY MEASURE DOMAIN

Outcome

The validity of measures depends on how they are built. By examining the key building blocks of a measure, you can assess its validity for your purpose. For more information, visit the [Measure Validity](#) page.

SECONDARY MEASURE DOMAIN

Does not apply to this measure

Brief Abstract

DESCRIPTION

This measure is used to assess risk adjusted hospital mortality for intensive care unit (ICU) patients utilizing the Acute Physiology And Chronic Health Evaluation (APACHE) IV® predictive methodology, version IV, now in the public domain. Note: both the predicted and the observed rate are reported.

Measure rates for risk adjusted hospital mortality of ICU patients should be analyzed in conjunction with the risk adjusted ICU length of stay. See the related National Quality Measures Clearinghouse (NQMC) measure summary [Intensive care: intensive care unit \(ICU\) length of stay \(LOS\) by type of unit](#).

RATIONALE

Intensive care units comprise approximately 10% of acute care hospital beds. The number of annual intensive care unit admissions in the United States is estimated

to be 4.4 million patients. Due to an aging population and the increasing acuity of illness of hospitalized patients, both the total number of intensive care unit patients and their proportional share of hospital admissions overall are expected to grow.

Intensive care units have, on average, mortality rates between 12 and 17%. Overall, approximately 500,000 ICU patients die annually in the United States. Objective risk estimates are particularly important in the high-cost, emotional, and technologically demanding environment of intensive care units (ICUs). Because of the high costs of ICUs, precise quality improvement and utilization management strategies are essential. Knowledge of the risk faced by a patient on the day of ICU admission could provide an empiric basis for quality improvement and utilization activities. Estimates during the course of therapy could be useful in investigating the optimal time for discharge or in deciding how long to continue therapy.

PRIMARY CLINICAL COMPONENT

Intensive care; mortality

DENOMINATOR DESCRIPTION

Total number of adult patients having had a qualified (greater than 4 hours) intensive care unit (ICU) stay (see the related "Denominator Inclusions/Exclusions" field in the Complete Summary)

NUMERATOR DESCRIPTION

Total number of adult patients having had an intensive care unit (ICU) stay and whose hospital outcome is death

Evidence Supporting the Measure

EVIDENCE SUPPORTING THE CRITERION OF QUALITY

- One or more research studies published in a National Library of Medicine (NLM) indexed, peer-reviewed journal

Evidence Supporting Need for the Measure

NEED FOR THE MEASURE

Unspecified

State of Use of the Measure

STATE OF USE

Pilot testing

CURRENT USE

Internal quality improvement

Application of Measure in its Current Use

CARE SETTING

Hospitals

PROFESSIONALS RESPONSIBLE FOR HEALTH CARE

Measure is not provider specific

LOWEST LEVEL OF HEALTH CARE DELIVERY ADDRESSED

Single Health Care Delivery Organizations

TARGET POPULATION AGE

Age greater than or equal to 18 years

TARGET POPULATION GENDER

Either male or female

STRATIFICATION BY VULNERABLE POPULATIONS

Unspecified

Characteristics of the Primary Clinical Component

INCIDENCE/PREVALENCE

Unspecified

ASSOCIATION WITH VULNERABLE POPULATIONS

Unspecified

BURDEN OF ILLNESS

See "Rationale" field.

UTILIZATION

See "Rationale" field.

COSTS

Unspecified

Institute of Medicine National Healthcare Quality Report Categories

IOM CARE NEED

Getting Better

IOM DOMAIN

Effectiveness

Data Collection for the Measure

CASE FINDING

Users of care only

DESCRIPTION OF CASE FINDING

Total number of adult patients having had a qualified (greater than 4 hours) intensive care unit (ICU) stay

DENOMINATOR SAMPLING FRAME

Patients associated with provider

DENOMINATOR INCLUSIONS/EXCLUSIONS

Inclusions

Total number of adult patients having had a qualified (greater than 4 hours) intensive care unit (ICU) stay among:

- ICU patients 18 years of age or greater
- Patients who had a transplant during a previous hospitalization

Exclusions

- Patients less than 18 years of age
- Patients with less than a 4 hour stay in the ICU Patients who expired within 4 hours of ICU arrival
- Subsequent ICU admissions (after the first) within the same hospitalization
- Patients with ICU admitting diagnosis of burns
- Patients with ICU admitting surgical diagnosis of transplant (transplant occurs during the hospitalization)

DENOMINATOR (INDEX) EVENT

Institutionalization

DENOMINATOR TIME WINDOW

Time window follows index event

NUMERATOR INCLUSIONS/EXCLUSIONS

Inclusions

Total number of adult patients having had an intensive care unit (ICU) stay and whose hospital outcome is death

Exclusions

Unspecified

NUMERATOR TIME WINDOW

Institutionalization

DATA SOURCE

Medical record

LEVEL OF DETERMINATION OF QUALITY

Not Individual Case

OUTCOME TYPE

Clinical Outcome

PRE-EXISTING INSTRUMENT USED

Acute Physiology And Chronic Health Evaluation (APACHE) IV®

Computation of the Measure

SCORING

Rate

INTERPRETATION OF SCORE

Better quality is associated with a lower score

ALLOWANCE FOR PATIENT FACTORS

Risk adjustment method widely or commercially available

DESCRIPTION OF ALLOWANCE FOR PATIENT FACTORS

Predicted hospital mortality for intensive care unit (ICU) patients is calculated according to the Acute Physiology And Chronic Health Evaluation (APACHE) IV® methodology.*

*Refer to "ICU Risk Adjustment" section of the original measure documentation for details.

STANDARD OF COMPARISON

Internal time comparison

Evaluation of Measure Properties

EXTENT OF MEASURE TESTING

There were two phases of testing conducted on the intensive care unit (ICU) core measures as illustrated below:

- An alpha test that focused on feasibility of data collection and face validity, and
- A pilot test that involved a data collection period with testing for reliability of data elements required for measure calculation.

The Alpha Test

Alpha testing was conducted on an initial 9 measures in 2003. The objectives of the visits were to assess face validity, the feasibility of data collection, and to gain an understanding of the hospital's ICU environment. Face validity and feasibility of data collection were gleaned through focus group discussions, and the completion of an assessment tool for each measure tested.

Hospitals participating in the Alpha test were located in California, Indiana, Minnesota, New York, Pennsylvania, Texas, Tennessee, and Virginia. A total of 12 hospitals were visited in these states and one was accomplished through a conference call. The organizations varied from the community setting to large academic teaching hospitals. The majority of hospitals had separate Medical and Surgical Units or Mixed Medical/Surgical Units; a few had NICU's, CCU's and some hospitals had multiple units, for example, one hospital had 6 ICUs (Burn/Trauma, Vascular Surgical, Medical/Surgical, Neuro, CCU, and Cardiac Surgery). The alpha test resulted in 6 of the 9 measures moving forward for pilot testing.

The Pilot Test

Two separate and distinct test groups comprised of volunteer hospitals were utilized for the pilot test. The test objectives for each group were as follows:

Group 1:

- To assess from a three month data collection and transmission experience the following:
 - Assessment of data element reliability
 - Assessment of data collection effort
 - Discussion and identification of potential measure specification enhancements.

Group 2:

- To assess from a one-month data collection (without transmission) experience the following:
 - Data collection effort
 - Identification of potential measure specification enhancements.

Group 1 test group was comprised of 10 hospitals already participating in the Keystone Project (collaboration with the Johns Hopkins School of Medicine and the Michigan Hospital Association (MHA) to study the impact of processes of care on ICU patient outcomes). The 10 hospitals were geographically distributed across the state. The hospitals ranged from small (83 beds) to large (greater than 1067 beds), with correspondingly sized ICUs from 5 to 20 beds. Two hospitals were experienced APACHE users.

Ten pilot test hospitals were visited to re-abstract a sample of previously transmitted records. A total of 118 records were re-abstracted. The method of data collection for re-abstraction was retrospective, whereas hospital abstraction activities were primarily concurrent. For the ventilator bundle measures (ICU 1,2,3) Joint Commission staff rounded in the ICU approximately one hour after the completion of hospital staff rounding in order to verify head of bed elevation, stress ulcer disease (SUD) and deep vein thrombolysis (DVT) prophylaxis.

Group 2 consisted of 30 hospitals that were randomly selected from approximately 100 volunteer hospitals based on geographic location, bed size, urban/rural, teaching/non-teaching, type of ICUs, intensivist/no intensivist, Apache user/non-Apache user, National Nosocomial Infections Surveillance System (NNIS)/ non-NISS hospital.

EVIDENCE FOR RELIABILITY/VALIDITY TESTING

Lawler N. (Joint Commission on Accreditation of Healthcare Organizations (JCAHO)). Personal communication. 2006 Feb 10. 1 p.

Identifying Information

ORIGINAL TITLE

ICU-6: hospital mortality for ICU patients.

MEASURE COLLECTION

[Joint Commission Intensive Care Unit Measure Set](#)

DEVELOPER

Joint Commission on Accreditation of Healthcare Organizations

ADAPTATION

Measure was adapted from another source.

PARENT MEASURE

Day 1 Hospital Mortality Prediction (Cerner Corporation)

RELEASE DATE

2005 Feb

MEASURE STATUS

This is the current release of the measure.

SOURCE(S)

Specifications manual for national hospital quality measures - ICU. Oakbrook Terrace (IL): Joint Commission on Accreditation of Healthcare Organizations (JCAHO); 2005. various p.

MEASURE AVAILABILITY

The individual measure, "ICU-6: Hospital Mortality for ICU Patients," is published in "Specifications Manual for National Hospital Quality Measures - ICU." This document is available from the [Joint Commission on Accreditation of Healthcare Organizations \(JCAHO\) Web site](http://www.jointcommission.org). Check the JCAHO Web site regularly for the most recent version of the Specifications Manual and for the applicable dates of discharge. For further information, refer to www.jointcommission.org.

NQMC STATUS

This NQMC summary was completed by ECRI on January 17, 2006. The information was verified by the measure developer on February 10, 2006.

COPYRIGHT STATEMENT

The Specifications Manual for National Hospital Quality Measures - ICU, [Version 1.0, February 2005] is the intellectual property of and copyrighted by the Joint Commission on Accreditation of Healthcare Organizations, Oakbrook Terrace, Illinois. It is used in this publication with the permission of the Joint Commission.

© 2006 National Quality Measures Clearinghouse

Date Modified: 9/25/2006

The logo for FIRST GOV, with "FIRST" in blue and "GOV" in red, and a small red star above the "I".

